WE CLAIM:

1. A method for creating at least one decision tree for processing a sampled signal indicative of speech, the method comprising the steps of:

providing model sub vectors from partitioned statistical speech models of phones, the models comprising vectors of mean values and associated variance values;

statistically analyzing at least some of the model sub vectors of mean values to provide projection vectors indicating directions of relative maximum variance between the sub vectors;

calculating projection values for a plurality of the projection vectors;

selecting potential threshold values from analysis of a range of the projection values; and

creating the decision tree having decisions to divide the model sub vectors into groups, the groups being leaves of the tree, wherein the decisions are based upon selected threshold values selected from the potential threshold values, the selected threshold values being selected by change in variance between said model sub vectors the variance being determined from said mean values and associated variance values.

2. A method for creating at least one decision tree as claimed in claim 1, wherein the groups have statistical characteristics defining an acoustical subspace.

3. A method for creating at least one decision tree as claimed in claim 1, wherein the speech models are based on Gaussian probability distributions.

4. A method for creating at least one decision tree as claimed in claim 1, wherein the step of statistically analyzing is further characterized by the projection vectors being calculated by principal component analysis.

5. A method for creating at least one decision tree as claimed in claim 1, wherein the potential threshold values are selected from a subset of the projection values.

6. A method for creating at least one decision tree as claimed in claim 5, wherein the decisions are based upon an inequality calculation.

7. A method for creating at least one decision tree as claimed in claim 6, wherein the inequality calculation relates to inequality between a transpose of a selected model sub vector multiplied by a projection vector and one of said potential threshold values.

8. A method for creating at least one decision tree as claimed in claim 5, wherein the subset is suitably selected from projection vectors having a projection values with greatest variance.

9. A method for creating at least one decision tree as claimed in claim 8, wherein the potential threshold values are determined from a range between a minimum and maximum projection values of each of the projection vectors in the subset.

10. A method for creating at least one decision tree as claimed in claim 9, wherein the potential threshold values are determined by dividing the range into evenly spaced sub ranges.

11. A method for creating at least one decision tree as claimed in claim 1, wherein, the decision tree is a binary decision tree.

12. A method for speech recognition comprising the steps of:

providing a sampled speech signal processed into at least one feature vector representing spectral characteristics of a speech signal;

dividing the feature vector into sub feature vectors;

applying each of the sub feature vectors to a corresponding decision tree, to obtain groups of model sub vectors that are likely to indicate at least one phone of the sampled speech signal, the decision tree being created by analysis of the model sub vectors obtained from statistical speech models, wherein the decision tree has decisions based upon selected threshold values selected from potential threshold values, the selected threshold values being selected by change in variance between said model sub vectors the variance being

determined from said mean values and variance values associated with said model sub vectors;

selecting a plurality of the model sub vectors from the groups of sub feature vectors to thereby identify a shortlist of model sub vectors; and

processing the shortlist to provide a transcription of the sampled speech signal.

13. A method for speech recognition as claimed in claim 12, wherein the transcription is a text version of the sampled speech signal.

14. A method for speech recognition as claimed in claim 12, wherein the transcription is a control signal.

15. A method for speech recognition as claimed in claim 14, wherein the control signal activates a function on an electronic device.

16. A method for speech recognition as claimed in claim 12, wherein the potential threshold values are selected from a subset of projection values obtained from the model sub vectors.

17. A method for speech recognition as claimed in claim 16, wherein the decisions are based upon an inequality calculation.

18. A method for speech recognition as claimed in claim 17, wherein the inequality calculation relates to inequality between a transpose of a selected model sub

vector multiplied by an associated projection vector and one of said potential threshold values.

19. A method for speech recognition as claimed in claim 16, wherein the subset is suitably selected from projection vectors having projection values with greatest variance.

20. A method for speech recognition as claimed in claim 19, wherein the potential threshold values are determined from a range between a minimum and maximum projection values of each of the projection vectors in the subset.

21. A method for speech recognition as claimed in claim 12, wherein the potential threshold values are determined by dividing the range into evenly spaced sub ranges.